Activity: **6.5**
Develop System Test Plan

Responsibility: Project Test Team

Description: The objectives of the system test process are to assure that the software product adequately satisfies the project requirements; functions in the computer operating environment; successfully interfaces between user procedures, operating procedures, and other systems; and protects the software and data from security risks. The system should be tested under the same kind of daily conditions that will be encountered during regular operations. System timing, memory, performance, and security functions are tested to verify that they perform as specified. The functional accuracy of logic and numerical calculations are tested for verification under normal and load conditions.

Test data should be varied and extensive enough to enable the verification of the operational requirements. Expected output results should be included in the test plan in the form of calculated results, screen formats, hardcopy output, predetermined procedural results, warnings, error messages and recovery.

Detailed planning for the system testing helps to ensure that system acceptance will be successfully completed on schedule. When applicable, system testing must include the following types of tests.

- Performance tests that measure throughput, accuracy, responsiveness, and utilization under normal conditions and at the specified maximum workload.
- Stress tests to determine the loads that result in appropriate, non-recoverable, or awkward system behavior.
- Interface tests to verify that the system generates external outputs and responds to external inputs as prescribed by approved interface control documentation.
- System recovery and reconfiguration tests.
- Verification that the system can be properly used and operated in accord with its users guide and operating instructions.
- Verification that the system meets its requirements for reliability, maintainability, and availability, including fault tolerance and error recovery.

Description, continued:

- Verification of the effectiveness of error detection and analysis, and automated diagnostic tools.
- Demonstration that the system complies with its serviceability requirements such as accessibility, logistics, upgrades, diagnostics, and repair capabilities.

Work Product: Develop a draft System Test Plan that describes the testing effort, provides the testing schedule, and defines the complete range of test cases that will be used to assure the reliability of the software. The test cases must be complete and the expected output known before testing is started. The test plan should address the following.

- Provide a definition of, and the objectives for, each test case.
- Define the test scenario(s) including the step-by-step procedure, the number of processing cycles to be tested or simulated, and the method and responsibility for feeding test data to the system.
- Define the test environment including the hardware and software environment under which the testing will be conducted. Identify and describe manual procedures, automated procedures, and test sites (real or simulated).
- Identify test tools and special test support needs (e.g., hardware and software to simulate operational conditions or test data that are recordings of live data).
- Identify responsibilities for conducting tests; for reviewing, reporting, and approving the results; and for correcting error conditions.
- Develop a requirements verification matrix mapping individual tests to specific requirements and specifying how each system requirement will be validated.
- Schedule for integrating and testing all components including adequate time for retesting.

Review Process: Conduct peer reviews or structured walkthroughs to assure that each system test procedure is accurate, complete, and accomplishes the stated objectives. The System Test Plan will be reviewed and revised as needed during the Programming Stage.